

Application No. 09/815,573
Amendment Dated December 22, 2004
Reply to Office Action of September 22, 2004

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-7 (canceled)

Claim 8 (currently amended): A method of maintaining milk production in a dairy cow fed a low phosphorus diet, comprising the steps of:

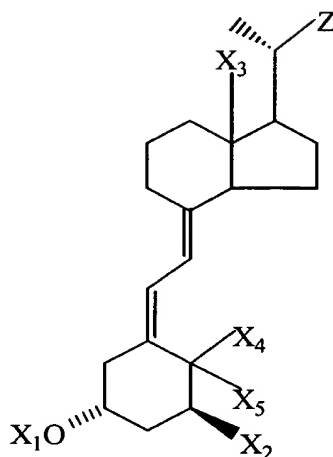
replacing ~~some or~~ all inorganic phosphorus in a diet for a lactating dairy cow with an effective amount of a 1α -hydroxylated vitamin D compound; and
feeding said diet to said dairy cow.

Claim 9 (previously presented): The method of claim 8 wherein said diet includes a feed, and said 1α -hydroxylated vitamin D compound is fed as a top dressing on said feed.

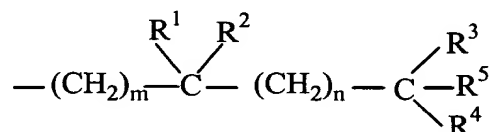
Claim 10 (currently amended): The method of claim 8 wherein said effective amount of the 1α -hydroxylated vitamin D compound comprises about $0.1\mu\text{g/kg}$ to about $100\mu\text{g/kg}$ ~~$\mu\text{g/kg}$~~ of diet.

Claim 11 (previously presented): The method of claim 8 wherein said diet includes a feed, and said feed contains 0% by weight of an inorganic phosphorus supplement.

Claim 12 (previously presented): The method of claim 8 wherein said 1α -hydroxylated vitamin D compound is characterized by the following general structure:



where X_1 may be hydrogen or a hydroxy-protecting group, X_2 may be hydroxy, or protected hydroxy, X_3 may be hydrogen or methyl, X_4 and X_5 each represent hydrogen or taken together X_4 and X_5 represent a methylene group, and where Z is selected from Y, -OY, -CH₂OY, -C≡CY and -CH=CHY, where the double bond may have the cis or trans stereochemical configuration, and where Y is selected from hydrogen, methyl, -CR₅O and a radical of the structure:



where m and n, independently, represent integers from 0 to 5, where R¹ is selected from hydrogen, hydroxy, protected-hydroxy, fluoro, trifluoromethyl, and C₁₋₅-alkyl, which may be straight chain or branched and, optionally, bear a hydroxy or protected-hydroxy substituent, and where each of R², R³ and R⁴, independently, is selected from hydrogen, fluoro, trifluoromethyl and C₁₋₅ alkyl, which may be straight-chain or branched, and optionally bear a hydroxy or protected-hydroxy substituent, and where R¹ and R², taken together, represent an oxo group, or an alkylidene group, =CR₂R₃, or the group -(CH₂)_p-, where p is an integer from 2 to 5, and where R³ and R⁴, taken together, represent an oxo group, or the group -(CH₂)_q-, where q is an integer from 2 to 5, and where R⁵ represents hydrogen, hydroxy, protected-hydroxy, or C₁₋₅ alkyl.

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Claim 13 (previously presented): The method of claim 8 wherein the vitamin D compound is 1α -hydroxyvitamin D₃.

Claim 14 (previously presented): The method of claim 8 wherein the vitamin D compound is $1\alpha,25$ -dihydroxyvitamin D₃.